N. MEYERS.

Sewing Machine.

No. 81,191. Patented Aug. 18, 1868.

Fig: 1.

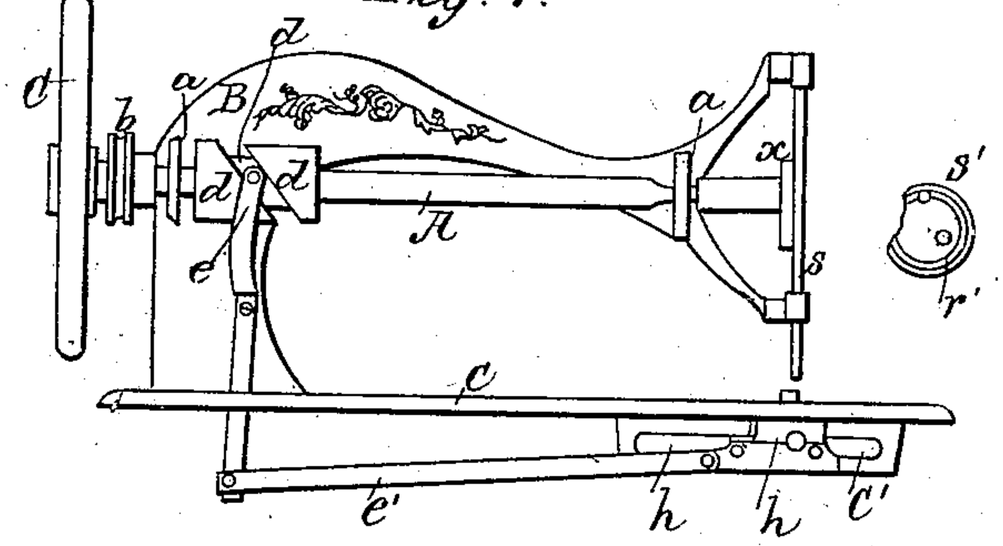
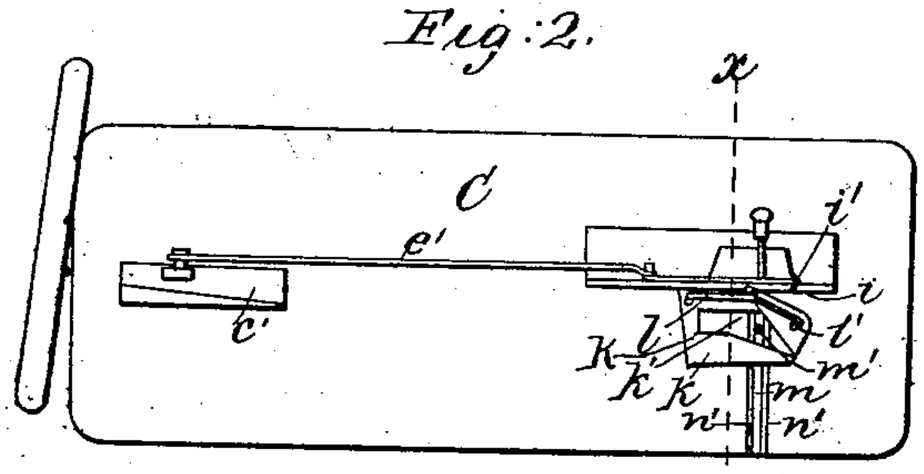



Fig: 2.




x

Fig: 4.

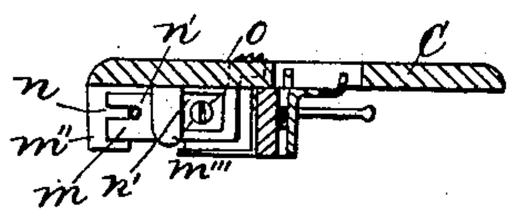



Fig: 3

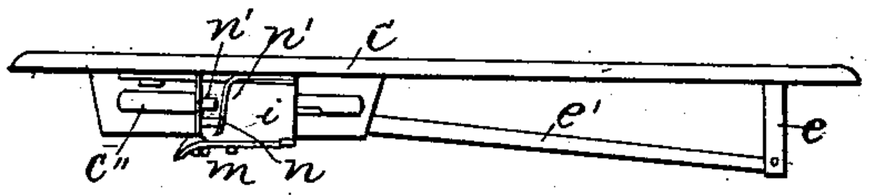



Fig: 5.

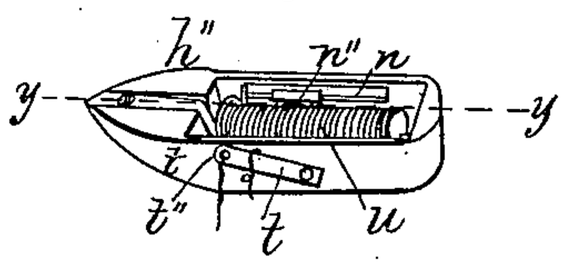



Fig: 4½.

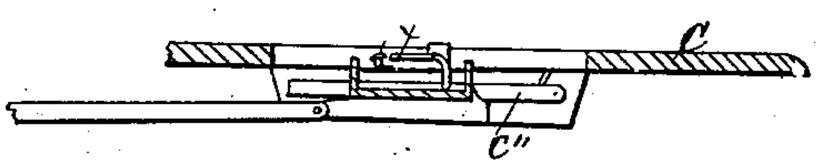
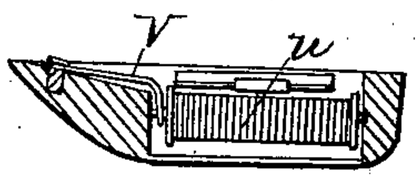



Fig: 6.




Witnesses
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# United States Patent Office.

NICHOLAS MEYERS, OF BUFFALO, NEW YORK, ASSIGNOR TO E. L. CHAMBERLAYNE AND E. C. POMEROY, OF SAME PLACE.

*Letters Patent No.* 81,191, *dated August* 18, 1868.

## IMPROVEMENT IN SEWING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, NICHOLAS MEYERS, of the city of Buffalo, in the State of New York, have invented a new and useful Improvement in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings and letters of reference marked thereon, making a part of this specification, in which—

Figure 1 is a side elevation, showing the parts above and below the plate C.

Figure 2 is a plan view of the under side of the plate C, with the shuttle-carrier and part of the feeding-mechanism.

Figure 4 is a transverse vertical section through the line *x x*, fig. 2.

Figure 4½ is a section showing the application of the curved needle to the machine instead of the shuttle.

Figure 5 is a view in perspective of the shuttle; and

Figure 6 is a longitudinal vertical section through the lines *y y*, fig. 5.

To enable those skilled in the art to make and use my invention, I now proceed to describe its construction and operation.

Similar letters in the drawings refer to like parts.

This invention consists of a combination of devices for imparting motion to the feeding-plate; also of other matters, touching which a full description is hereinafter set out.

A represents a metallic shaft sustained in brackets *a a*, projecting from an arm, B, of ordinary shape, rising from a plate, C, of the common construction. To the shaft A, motion is communicated in any convenient manner, as by a belt passing over the pulley *b*. A fly-wheel, *c*, is placed upon one end of the shaft A, and at different parts of the same shaft are located a cylinder-cam, *d*, which may be near the fly-wheel end, and a face-plate cam, *r*, which is on the opposite end from the fly-wheel. The cylinder-cam is the source of the motion of the shuttle and of the feeding-devices, and the face-plate cam is the source of the motion of the needle-bar; hence it appears that all the motions of the working parts of this machine are derived from one shaft, the shaft A. The arm B may be made tubular, and the shaft A enclosed within it.

As before remarked, the cylinder-cam *d* is the source of the motion of the shuttle and feeding devices. The means by which said motion is transmitted are as follows: In the groove *d'* plays a pin, *d''*, with a friction-roller attached. The pin *d''* projects into the groove from near the upper end of an arm, *e*, pivoted to the main arm B at a point beneath the cylinder-cam *d*, and bent outward from the pivoted point so as to partially embrace the said cam. The arm *e* passes down through a slot, *e'*, of the plate C, and terminates at a suitable distance below said plate, where it is jointed to one extremity of a connecting-bar, *e'*, the other extremity of which is jointed to a shuttle-carrier, *h*, sliding horizontally in a slotted guide, *h'*, projecting downward frem the lower side of the plate C, and in a slot, *c''*, in said plate, traverses a shuttle, *h''*. On the opposite side of the slotted guide *h'*, and attached to the shuttle-carrier *h* is a plate, *i*, from the lower edge of which projects horizontally a plate, *k*, having a wedge-shaped slot, *k'*, in it, by means of which slot the plate *k* is divided nearly into two parts, whereof the outer part, *k''*, is wedge-shaped, and also inclined downward for a suitable distance at its point, as shown in Figure 3. To the other part of the plate *k*, on the opposite side of the slot *k'*, is pivoted a piece, *l*, nearly of the shape of a right triangle, whereof the pivoted point is near the apex, and the hypothenuse side partially covers the slot *k'*, and the base is about at the outer end of the plate *k*. Two pins, *l' l'*, project downward from the under side of the plate *l*, between which passes an elastic arm, *l''*, rigidly attached at one end to the plate *k*, which arm, whenever the piece *l* is forced inward, tends to press it outward again. The function of the triangular-shaped piece *l* is to press, during the forward throw of the shuttle-carrier, to which, as has been shown, it is indirectly attached, upon the pin *m'* of the plate *m*, which pressure forces the plate *m*

outward between the guides *n' n'*, which form a way between them for the plate *m* to slide in. The piece *l* being only pivoted to the plate *k*, and restrained from yielding to any horizontal force only by the elastic arm *l''*, when it strikes the pin *m'*, gives way a little at first, whereby a shock to the parts is avoided. The plate *m* is held between the guides *n' n'*, by means of pins projecting from one of the guides *n'*, and entering slots *m'' m'''*, one near each end of the plate *m*, whereof the slot *m'''* has its upper side inclined, being of a triangular shape. From the inner end of the plate *m* projects upward the feed-plate *o*, playing through a transverse slot in the plate C.

Let it now be supposed that the shuttle-carrier *h* is at the end of its throw, the shuttle having passed through the loop. When this is the case, the triangular-shaped piece *l* must also be at the end of its throw, and have forced plate *m* backward, by impinging against the pin *m'*. To have reached this position, the plate *m* must have descended, owing to the inclined side of the slot *m'''*, which rests on the pin *n''*. To admit of the descent of the plate *m* is the purpose of the inclination of the part *k''* of the plate *k* at its point, down which sloping part the plate *m* passes as the plate *k* slides under it. By the aforesaid descent of the plate *m* the feed-plate *o* is withdrawn beneath the surface of the plate C, and by the above-mentioned outward movement of the plate *m*, the feed-plate is drawn backward.

It is obvious that the parts are now in proper position for the backward throw of the shuttle. This is effected by the motion derived from the groove *d'*, of the cylinder-cam *d*, immediately by the bent arm *e*, and remotely by the shuttle-carrier. During this movement the plate *k*, is borne backward with the shuttle-carrier, and the inner inclined side of its wedge-shaped piece *k''*, impinging against the pin *m'*, throws the plate *m* inward toward the shuttle-carrier. At the moment of the beginning of the aforesaid forward movement of the plate *m*, it receives also an upward movement, by reason of being lifted up from the pin *n''*, which occupies a little recess at the upper corner of the slot *m'''*, by the inclined part *k''* of the plate *k*, as it passes under said plate *m*. The aforesaid upward motion of the plate *m* lifts the feeding-plate *o* above the surface of the plate C, and causes it to bite the cloth in the usual manner between itself and the presser-foot. The cloth is then fed forward by the continued forward motion of the plate *m*, produced as before described. The return-motion of the feeding-plate has been above set out.

From the foregoing it appears that the motion of the feeding-plate is tripartite, viz, an upward, a forward, and a combined downward and backward one. It also appears that the feeding-device is attached to the shuttle-carrier, whereby a separate mechanism for operating the former is dispensed with.

The face-plate cam *r*, as has been stated, is the source of the motion of the needle-bar *s*, which moves in suitable guideways in the end of the main arm B, and from which a pin, *s'*, projects into the groove *r'* of the face-plate cam, said pin being provided with a friction-roller.

The groove *d'* of the cylinder-cam *d* is uniform on both sides of said cam. The pin *d''* of the bent arm *e* will, therefore, if there is nothing in the working of the other parts to prevent, traverse the groove with equal facility, whether the cam revolves in one direction or the other. The shuttle-carrier and feeding-devices having a reciprocating motion derived from a vibrating-arm, will, it is obvious, begin to move, in whichever direction the arm begins to move.

The groove *r'* of the face-plate cam *r* is also uniform on both sides of said cam; the pin *s'* of the needle-bar *s* will, therefore, as was said of the pin *d''* of the bent arm *e*, traverse its groove with the same readiness in whichever direction the cam *r* may revolve, provided its connection with other parts of the machine does not prevent.

It appears, then, that each of the parts of this machine operates independently of the direction of rotation of the shaft A. There is, therefore, no wrong way of turning the shaft, one way operating as well as the other, and there is no possibility of the happening of accidents from reversing the motion.

I have now completed my description of the construction and operation of the machine itself, and proceed to call attention to my shuttle, which is seen in figs. 5 and 6.

The shuttle itself is of ordinary form. Upon its outer side, however, is an improved tension-device, in the shape of an elastic steel strap, *t*, fastened to the shuttle at one end by means of a screw, and free at the other, being pressed against the shuttle by its own elasticity.

In the outer end of the strap is a small notch, *t'*, terminating in a little hole, *t''*. The thread, as it comes from the spool *u*, passes through a hole in the side of the shuttle, and is drawn into the hole *t''* through the notch *t'*. The strap *t* operates as a tension-device, with greater or less force, according as it is screwed more or less tightly to the shuttle.

Within the shuttle is an improved spool-holding device in the shape of a spring, *v*, at the forward end of the shuttle, in which spring one of the journals of the spool *u* is placed, and by which the spool is pressed with more or less force against the opposite end of the shuttle. By means of this arrangement the spool may be easily inserted in or removed from the shuttle.

In the inner side of the shuttle there is a longitudinal slot, *u*, lengthwise of which is a wire, *w'*, rigidly secured to the shuttle at the ends of the slot. An eye, *u''*, through which passes the thread on its way to the tension-strap *t*, slides on the wire *w'*, as the thread travels in unwinding along the spool. The function of the eye is to insure the free delivery at all times of the thread from the spool.

It will be seen that the tension may be changed simply by altering the screw which holds the strap *t*, without removing the shuttle from the carrier. Also, that the thread may be removed from or placed under the strap, without change of tension.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The plate *k*, provided with the wedge-shaped and inclined part *k''*, in combination with the pivoted triangular-shaped piece *l*, and the plate *m*, the latter being provided with the triangular-shaped slot *m'''* and the feed-plate *o*, all operating together to produce the feed-motion, substantially as described.

2. The shaft A, in combination with the vibrating-arm *l*, the connecting-rod *e'*, and the carrier *h*, bearing upon one side the shuttle, and upon the other side the feeding-mechanism, substantially as described.

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Witnesses:

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